COST ANALYSIS OF REPRODUCTIVE HEALTH SERVICES PROVIDED BY THE MINISTRY OF HEALTH, GUATEMALA.

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DATE: **APRIL 3, 1998**

SITE: **GUATEMALA**

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SUMMARY

In October, 1995, the Ministry of Health of Guatemala and INOPAL III initiated a project aiming to improve integration of reproductive health service provision at the Ministry's health centers and posts. The operations research project tested a job aid (algorithm) to help service providers in screening their clients' need for reproductive health services. The algorithm instructs the service provider to question the client to determine what type of reproductive health services are required and provide or refer clients to needed services. Under the improved service provision model, clients received more services per consultation, as compared to the traditional single-service consultation model.

Drawing from the previous operations research project, this study compares the costs and cost-effectiveness of providing multiple services during each consultation *vis a vis* single service consultations. The report addresses itself to the question: can a full range of reproductive health services be provided at an affordable cost to the Ministry of Health? The objective of the study was, thus, to determine if integration of services reduces costs per consultation.

The study tested the hypotheses that an integrated service delivery system will show smaller average costs, prove more cost-effective and reduce client costs, as compared to a vertical system. To test these hypotheses we conducted cost analyses of services provided at experimental and control sites of the larger intervention.

Results confirm the hypotheses that average costs are smaller under an integrated service provision model than the vertical system. This is particularly true of family planning, prenatal and well child consultations. Integration of services is cost-effective in the sense that, under an integrated model, more services are provided per consultation at the same cost. Estimations show that the client's cost for each visit is similar among experimental and control sites.

This study shows that integrated services make more effective the consultation time and avoid duplication of administrative procedures, thus reducing unnecessary revisits by clients. Single-service consultations impose administrative and collateral costs which, as shown in this study, may be reduced in a multi-service model.

I. INTRODUCTION

A. Background.

The Ministry of Health of Guatemala has traditionally had a vertical reproductive health service provision system. This is a system in which services and consultations are offered on an individual basis. For example, Mondays are devoted to prenatal care, Tuesdays to postnatal care, Wednesdays to gynecological consultations, an so forth. Only emergency attention, vaccinations and, more recently, family planning consultations are offered on a daily basis. This vertical system of organization has administrative advantages, such as control of clients enrolled in each program. However, the system has disadvantages for quality of care and for clients. It offers a limited range of services and, therefore, satisfaction of clients´ needs is limited. From the clients´ perspective it represents one visit to the Health Center or Post every time they require attention. This artificially generates a large number of consultations and visits of clients that could have been attended in a single consultation.

A central problem of the vertical system is that, following national and international principles, reproductive health care should be comprehensive, but in fact services are provided independently in single-service consultations.

This problem originates in training received by service providers and in the form of organization of services. However, the problem is also related to the lack of job instruments that enable service providers to identify reproductive health needs of clients, and act accordingly.

To solve this problem, in October, 1995, the Reproductive Health Unit (RHU) of the Ministry of Health (MOH) of Guatemala and INOPAL III initiated an operations research project to strengthen the integration of reproductive health (RH) services in the Departments of Quetzaltenango and San Marcos. The project tested a job aid (algorithm) to help service providers in screening their clients' need for reproductive health services. The algorithm instructs the service provider to question the client to determine what type of reproductive health services are required and provide or refer clients to needed services. The test included all services offered by the MOH of Guatemala. These include prenatal and postnatal care and lactation, well baby care and immunizations (other reproductive health services, such as diagnosis and treatment of STDs and cervical and breast cancer prevention are seldom available in health centers in Guatemala). The integrated service provision scheme was labeled "systematic offering of reproductive health services".

Under the improved service provision model, clients received more services per consultation, as compared to the traditional single-service consultation model. Results of this intervention showed that in nine months in 1996, the health outlets that used the

algorithm had 124% more new family planning than in 1995, compared with an increase of 21% in control group outlets. The differences observed in the case of other reproductive health services (prenatal care, post-natal care and well baby care) were not as consistent as those observed for family planning.

Drawing from the previous operations research project, this study compares the costs and cost-effectiveness of providing multiple services during each consultation *vis a vis* single service consultations. The report addresses itself to the question: can a full range of reproductive health services be provided at an affordable cost to the Ministry of Health? The objective of the study was, thus, to determine if integration of services reduces costs per consultation.

B. Program setting.

The largest provider of health services in Guatemala is the Ministry of Health (MOH): it has an infrastructure of 29 general hospitals, 218 health centers and 667 health posts attended by auxiliary nurses (MSPAS, 1989). The MOH service infrastructure is organized administratively into twenty four health areas. Each of these health areas, known as *jefaturas*, is managed by an Area Chief whose responsibility is to monitor and coordinate activities between the various hospitals, health centers and health posts falling under his or her jurisdiction. In addition to the Area Chief, who is a physician, the staffing of the Jefatura, located in the capital or main city of each Guatemalan department, consists of a nurse, a social worker, a rural health technician (RHT), an expert in environmental health, a book-keeper, and one or two administrative personnel. Each member of this team or group supervises activities of the personnel with similar training in the health districts. Thus, the nurse at the Jefatura level supervises activities of all the nurses in her health area, the rural health technician all the technicians in his area, and so on.

Each health area typically consists of between three and fifteen districts. A district is defined as a health center and its surrounding health posts (MSPAS-DGSS, 1989). At the district level, a physician, based in a health center, takes on the role of District Chief and is responsible for managing and supervising activities at that center and the corresponding health posts; there is an average of four health posts per health center, although a health district may have as few as one post or as many as 13. At the health centers, family planning services are provided either by the nurse or, more frequently, by nurse auxiliaries. At health posts, family planning and all other health services are provided by auxiliary nurses, who are routinely supervised by the nurse of the health center. Health Centers provide pills, condoms, vaginal tablets and IUDs, whereas health posts only have available pills, condoms and vaginal tablets. Clients requesting permanent methods at health centers or posts are referred to those hospitals that provide this service, or to other service providers who do, mostly, APROFAM.

II. OBJECTIVES.

The objectives of the study were: (1) To estimate the costs of the reproductive health service provision models at the experimental and control service delivery points participating in the systematic offering of reproductive health services project, and; (2) To compare the costs of the integrated vs. the disjointed delivery of reproductive health services.

Research questions addressed in this study are: does integration of services reduce costs per consultation? to what extent integration of reproductive health services provide an economic saving both for service providers and clients?

III. METHODOLOGY

A. Hypotheses and definitions.

The study tested the following hypotheses:

1. **Average costs per consultation will be smaller in an integrated service delivery system than in a vertically organized system.**

The independent variable is the service delivery system, including integrated and vertical service provision systems. An integrated service delivery system is one in which multiple services are provided per consultation. A vertical system is one in which only one service is provided per consultation.

The dependent variable is the average cost of consultations. Average costs are the mean cost per type of consultation, computed by dividing the total cost attributable to a given service (e.g. prenatal care, postnatal care, family planning) or program, by the number of services provided. Services analyzed include prenatal care, postnatal care, vaccinations, well child consultations, pap smears, STD and family planning consultations.

The reference OR project demonstrated that an integrated organization of services provides more services per client than a vertical system. Thus, average costs per service should be smaller in an integrated service delivery system because more services are provided at the same cost. Dividing the same service costs by a larger number of services, results in a reduced cost per consultation.

2. **It is more cost-effective to provide reproductive health services in an integrated service delivery system than in a vertically organized system**

Effectiveness is the degree to which service objectives are achieved. In this case, effectiveness is measured in terms of satisfaction of women's reproductive health needs or

the number of services provided during each consultation. The dependent variable, cost-effectiveness, refers to the economic cost of providing one or more services per consultation.

Integration of services makes more efficient the time of consultation by avoiding duplication of administrative procedures, such as filling-out registration forms, medical histories, admission forms, and exploratory questions. It also avoids unnecessary duplication of exploratory information during the diagnostic stage of the consultation.

3. **Client costs will be equal in an integrated system, as compared to the vertical service provision system.**

From the client's perspective, the integrated service represents lower transportation and time costs because it reduces the number of visits required to receive a comprehensive attention and reduces the waiting time to receive preventive medical care. The client´s costs should be similar under both service provision models because distance travelled, waiting time to receive consultation and consultation durations remain constant. Client costs include costs of transportation, time invested to travel to health centers or posts, waiting time to receive consultation, consultation duration, miscellaneous travel expenditures, and income that working women fail to receive while attending health facilities.

B. Measurement and procedure

To measure each of the above dependent variables this study relied on three data collection strategies, as follows:

1. **Average costs.** These costs were determined by Health Area accountants, drawing from the District's accounting system and health statistics. Accountants from participating Health Districts collaborated in this study, providing estimations of yearly expenditures per Health Center and Post.

Average costs of providing reproductive health services were estimated by accountants at each of the participating Health Areas. Following standard accounting procedures, average costs were estimated on the basis of total expenditures of health centers and posts. Expenditures included in the analysis were the following:

(1) Salaries and honoraria of medical and administrative personnel.
(2) Materials and supplies, including food supplies, medicines and services.
(3) Maintenance and fuel expenses.
(4) Other expenses and miscellaneous.

Accountants determined through information provided by doctors and nurses what supplies, materials and consumables were used for each type of consultation. Based on listings of materials required for consultations, accountants determined monthly expenditures allocable to each service by center and post. As a second step, doctors and nurses provided estimations of time allocable to each service. Accountants requested

service providers to distribute their working time according to their subjective appreciation. For example, they estimated that they devote 10 per cent of their direct client attention time to family planning consultations, 43 per cent to childcare consultations and so forth. Discussions with service providers enabled us to estimate 70 per cent of time spent in direct attention to clients and 30 per cent in related administrative duties. Thus 70 per cent of monthly expenditures on salaries were allocated to variable costs of consultations. This procedure is an estimation of the total fixed expenditure per service.

To estimate a total cost per service per year we add variable costs (materials and labor) to the average fixed cost per type of service. Dividing the total cost per year by the number of consultations per service provided during the same period, we obtain the average cost per service per SDP.

2. **Cost-effectiveness**. Direct variable costs per service provided were estimated through non-participant observations of consultations. Trained observers used checklists to register all materials, supplies, medicines and instruments used during service provision. In addition, observers were trained to register the consultation time and the type of service provider involved. Consultation observation checklists also included a detailed registration of how the consultation was conducted. It was necessary to differentiate between first and subsequent visits for each type of consultation. Supervision was conducted to ensure that all observers follow the established rules and procedures for data collection and resource allocation estimation.

On the basis of the identification of the cost structure of programs and activities, it was necessary to translate inputs into monetary units. Such translation involves assigning a current market price to resources used. For example, the number of working hours or days of personnel, amount of supplies, hours of use of facilities and equipment were translated into a monetary figure.

The cost of labor was determined relying on an estimation of the proportion of time devoted by service providers in direct attention to clients. Integrated monthly salaries, including benefits, bonuses and taxes, were divided by the estimated number of minutes that service providers spend in direct attention to clients every month. The resulting figure is the estimated cost per minute of attention per worker.

3. **Patient costs**. Exit interviews were conducted among clients to assess their perspective after consultations. The procedure and methodology to conduct exit interviews is described in the final report of the reference project (INOPAL, 1997, *Systematic offering of family planning and reproductive health services in Guatemala*). The interview included questions about expenditures on transportation, meals and other expenses incurred to attend the SDP. The questionnaire also attempted to identify if another person accompanied her and if she left some business or occupation to attend the center or post.

Cost- related questions included in the exit interview included the following:

(1) What transportation mean did you use to come to this Health Center ?
(2) How much time did you spend coming to this Center?
(3) How many persons came with you in this visit?
(4) All expenses considered, how much will you spend in this visit to the Center?
(Interviewer: include transportation, meals, other expenses).
(5) By coming to this Center, did you fail to attend an activity by which you would earn money?
(6) How much money will you miss by coming to the Center?

Cost of time invested in attending SDPs was estimated assigning a minimum wage value to the reported time. Patient costs may thus be estimated by a direct addition of all expenses incurred.

C. Intervention.

The OR intervention was tested through a post-intervention experimental vs. control group comparison among selected Health Districts in the Departments of Quetzaltenango and San Marcos. Area Chiefs and District Directors were invited to participate on a voluntary basis; only those who expressed a strong willingness and who made firm commitments to participate became part of the sample frame. Twelve Health Districts were randomly allocated to the experimental and control groups, respectively. Each participating Health District has one Health Center and an average of four Health Posts. The original project design was to measure the impact of the strategy tested in terms of service delivery statistics, flow analysis of patients at health centers and posts, exit interviews to determine the quality of care and the extent of reproductive health services.

Cost analyses were conducted in eight health districts - four in Quetzaltenango and four in San Marcos, which are the Departments where the reference OR project was implemented. Within each health district, the corresponding health center and four health posts were surveyed to determine direct costs of services offered. Two health districts were selected among the experimental and the control groups, respectively. An average of four health posts from each health center were surveyed. Considering the experimental and the control groups, a total of eight health centers and thirty-two health posts were included in the sample, for a total of fourty SDP´s.

The number of SDPs included in the research design were the following:

Group	Quetzaltenango		San Marcos		Total	
	Centers	Posts	Centers	Posts	Centers	Posts
Control	2	8	2	8	4	16
Experimental	2	8	2	8	4	16
Total	4	16	4	16	8	32

Services analyzed included the following: prenatal care, post natal care, family planning, well-baby care, immunizations, PAP smears and STDs, where applicable. Observations differentiated among first and subsequent visits.

IV. RESULTS.

A. Average costs per service.

Table 1 shows the average costs estimated per service in the experimental and control groups and the corresponding total. The last two columns show the statistics of a one-way ANOVA model tested in each service. The ANOVA model, in this case has two groups: experimental and control. The first row shows the base numbers on which the analysis is based; this is the number of SDPs for which reliable cost information was developed.

Results show that the average cost per service was USD $11.22, including attention provided at health centers and posts. The average cost per service among experimental sites was lower than the control group. The average cost per service among experimental sites was USD $9.50 as compared to USD $13.34 among the control group, or a 30 per cent difference. The average cost of family planning consultations was USD $15.29. The average cost of this service was smaller in the experimental groups (USD $13.56) than the control group (USD $17.41) . The corresponding ANOVA model shows that this difference is not significant from a statistical point of view, but it should be acknowledged that the difference is substantial.

Results show that the average cost of vaccinations is substantially higher among experimental sites, than control SDPs. While the estimated cost of providing vaccinations in experimental sites was USD $4.15, the corresponding cost among control sites was USD $1.3. This difference is significant both from a practical and statistical points of view.

Results shown in table 1 include Health Centers and Posts. To control the effect of SDPs of different sizes table 2 shows the average cost per service among health centers and posts in the experimental and control areas. As in table 1, the last two columns of this table show the relevant statistics of an ANOVA model tested to compare experimental and control health centers and posts. In this case, the model includes four groups: health centers and post at experimental and control sites.

Table 2 shows that the average cost of providing family planning services was smaller among experimental center and posts, as compared to the control group. These results confirm the hypothesis that average costs per service are smaller in an integrated service provision system, as compared to a vertical form of organization. Family planning consultations cost USD $3.81 at health centers in the experimental area, as compared to

USD $12.28 at centers in the control group. Among experimental health post, the average cost of family planning consultations was USD $15.72, as compared to USD $18.43 in the control posts. The corresponding ANOVA model does not reach the significance level, but the difference may be considered substantial. It may be noted that the statistical test fails to show significance due to the small number of cases included in the analysis. Note that only three control centers and four experimental centers are included.

Table 2 also shows that vaccinations were provided at a substantially higher cost among experimental sites, as compared to control centers and posts. Vaccinations applied at experimental centers had an average cost of USD $1.96 as compared to USD $0.79 among control centers. The corresponding estimations among posts are USD $4.73 and USD $1.46 in the experimental and control groups respectively.

B. Cost-effectiveness.

Table 3 shows the number of first time and follow-up consultations observed, and their distribution according to the number of services provided during consultation. According to these results, 86 per cent of clients attending consultations (487 cases out of 562 consultations observed) attend clinics and posts to receive one single service. About 13 per cent received two services in the same visit, and less than 1 per cent receive more than two services. It is reasonable to observe in the same table that follow-up visits tend to be single-service consultations.

It may be noted in table 3 that, while 92 per cent of follow-up visits were single-service consultations among control sites, the corresponding figure among experimental sites was 81.1 per cent. This result shows that the experimental intervention proved successful in encouraging service providers to provide more than one service per consultation.

Table 4 shows the average duration time of first time and follow-up visits. Results show that the average consultation time is 11.18 minutes, including first time visits and subsequent visits. The average duration of experimental consultations was 10.7 minutes, as compared to 11.5 among the control sites. Provision of additional services increase in less than one minute the average consultation duration in experimental sites. However, as shown in the last columns of table 4, provision of additional services increases significantly the consultation duration among control SDPs. This result suggests that the job aid facilitated provision of additional services among experimental sites.

First-time consultations among experimental sites were conducted in less time than control sites. The average consultation duration was 12 minutes among experimental sites, it was 13.4 minutes among control sites. Similar results may be observed among follow-up consultations. This result is significant because, as shown in table 4, consultations among experimental sites provided two or more services more frequently than control sites.

Table 5 shows the time of personnel attention required to provide single and multiple service consultations. Nurses among experimental sites provided single-service consultations in an average of 10.95 minutes. Provision of additional services increased

direct interaction with clients to 11.65 and 13.5 minutes. This is an insignificant increase of one to two minutes to provide additional services. In contrast, nurses among control sites provided single-service consultations in approximately 12.58 minutes, and each additional service implies one more interaction minute. These results suggest that consultations among experimental sites provided more services in less interaction time.

Finally, table 6 shows a monetary translation of consultation times described in previous tables. Results presented in this table show an average labor cost of USD $2.20 per consultation. The average labor cost in general consultations is USD $1.61, prenatal consultations USD $3.06, postnatal consultations require USD $6.27, and family planning consultations cost USD $4.19 per client. Cost differences between doctors and nurses in control and experimental sites are not statistically different from zero.

C. Client costs.

Table 7 shows that 72 per cent of 256 clients interviewed arrived walking to health centers. Clients attending control sites arrived walking more frequently (79 per cent) than clients in experimental sites. (68 per cent). One quarter used bus or collective transportation. At the control sites, 20 per cent used buses or taxis, as compared to 27 per cent among the experimental sites. Table 7 also shows that approximately 11 per cent of interviewees declared having left unattended some business: proportions are similar among control and experimental sites. Finally, the last section in table 7 shows the average number of minutes spent in transportation, expenses and forgone income among those who have businesses. Results show that the average transportation time was 46.49 minutes: 59 minutes at control SDPs and 39 minutes among experimental sites. Visit-related expenses were estimated at USD $ 0.71 on the average.

Results presented in table 7 confirm the hypothesis that client costs are similar under both service provision models. A comparison between columns in this table shows that transportation costs, transportation time, expenses and foregone income are similar under both models.

To estimate a total cost per visit it is possible to conduct the following calculations.

(1) Total time invested per visit. The estimated transportation time is 46.49 minutes one-way. Arguably, the average transportation time may be (46.49 x 2) 92.98 minutes. As shown in table 7, these figures were variable among control and experimental sites, suggesting that transportation facilities are inversely related to transportation time invested by clients to visit clinics.

It is necessary to add the total waiting and consultation time. The average consultation time is 11.18, according to observations conducted under this study (see table 4). Waiting time is estimated at 45 minutes.

Therefore, the components of total time invested by clients per visit are the following:

Component	Minutes	Cost USD$
Transportation	92.98	1.83
Waiting time	45.00	0.88
Consultation	11.18	0.22
Total	149.16	2.93

To achieve a monetary expression of time invested to visit clinics, we assumed a minimum wage value for clients´ time. Assuming the official minimum daily wage of USD$ 8.93 we estimate a cost of USD$ 0.0186 per minute time of clients (this is USD$ 8.93 divided by 8 hours or work). Results of the corresponding estimations are presented in the previous table, which shows that the total cost of time invested by clients is USD$ 2.93: USD$ 1.83 for transportation, USD$ 0.88 waiting at centers to receive services, and USD$ 0.22 during the average 11.18 minutes of consultation.

(2) Expenses.

Table 7 showed that the average expenditure per client visiting clinics is USD$ 0.71, including meals, snacks, and miscellaneous expenses (except travel).

(3) Foregone income.

The last component of clients´ cost include forgone income among those who have businesses or jobs, and who stop receiving income while attending the center or post. Results from exit interviews showed and average of USD$ 2.28 per person who have businesses or job (29 cases). However, to estimate an average foregone income for the entire population attending health centers, it is necessary to estimate the average foregone income among the entire sample, assuming that the foregone income among those not working is zero. The result of this calculation is that the entire population forgoes an average of USD$ 0.26.

To summarize, clients´ costs are the following: (1) time invested USD $2.93; (2) expenses during visit USD$ 0.71; (3) foregone income, USD$ 0.26. Briefly, the total cost of visiting a health center for the client is USD$ 3.90.

V. DISCUSSION

Results confirm the hypotheses that average costs are smaller under an integrated service provision model than the vertical system. This is particularly true of family planning, prenatal and well child consultations. Integration of PAP smears and STD services proved more expensive among experimental sites than control SDPs. Integration of services is cost-effective in the sense that, under an integrated model, more services are provided per consultation at the same cost. Under an integrated system, service providers make better use of the consultation time at no additional cost. Estimations show that the client's cost for each visit is USD$ 3.90. This estimation includes transportation, waiting and consultation time, travel and miscellaneous expenses and forgone income among those who left business to attend the health center or post.

Results of this study show the economic savings of integrating reproductive health services. There are three economic advantages of service integration: (1) average costs per service are smaller, (2) consultation time use is more efficient, in the sense that more services are provided in the same consultation time and (3) clients avoid duplication of costs of repeated visits and receive more services per visit.

Results presented are important because they indicate the limitations and obstacles to actually implement a comprehensive care model at health centers and posts. One of the major arguments against the implementation of integrated services is that they are expensive and resources available are insufficient to effectively inquire during consultations about additional health needs clients may have. This is specially true in centers and posts that provide an average of, say, 20 consultations per service provider per day. In a 6-hour day of work (360 minutes), this client turn-over rate implies an average of (360/20) 18 minutes per client, including administrative duties, waiting time between clients and down time. According to local researchers, in India, the average number of consultations provided per day by a service provider at health posts is 40 and, in some cases, up to 50. In Mexico, according to the National Register of Health Infrastructure; (*Secretaría de Salud. Sistema Estatal de Información Básica. 1995. Recursos para la Salud),* service providers currently may attend up to 10 clients per day in States like Zacatecas, Veracruz, Morelos and Coahuila. In other States, such as Aguascalientes and San Luis Potosí, such average is around 5 clients per day (Recursos para la Salud, 1995, p.35). It may be argued that, considering the daily workload and resources available, an integrated service provision model is impractical.

However, contrary to expectations, an integrated model reduces the number of return visits, and duplication of unnecessary consultations, both for service providers and clients. Results of this study show that integrated services make more effective the consultation time and avoid duplication of administrative procedures required by unnecessary re-visits. Single-service consultations impose administrative and collateral costs which, as shown in this study, may be reduced in a multi-service model.

Results of this study have been widely discussed within the Ministry of Health and among reproductive health experts in Guatemala. A booklet describing project results, with special emphasis on costs, was developed and distributed among service providers, program administrators and interested parties. The study prompted a discussion among program administrators. As a result of the OR study the algorithm was adopted as a job tool for all service providers at the MOH in Guatemala. The cost study has encouraged program administrators to reconsider the current organization of services in favor of a more flexible scheme.

Table 1.
Average cost per service among experimental and control groups.
Ministry of Health, Guatemala. USD 1997.

	Experimental	*Control*	*Total*	*F*	*sign(F)*
Family planning	13.56	17.41	15.29	1.02	0.31
Prenatal	13.72	14.25	13.96	0.02	0.88
Postnatal	14.42	14.34	14.38	0.00	0.98
Vaccination	4.15	1.33	3.20	3.21	0.09
Child	9.29	13.24	11.01	0.92	0.34
PAP	10.27	3.11	8.48	0.67	0.50
STD	6.86	2.37	6.58	0.77	0.40
Total	9.50	13.34	11.22	0.93	0.34
Base N	7	33	40		

Graph 1.
Average cost per service among experimental and control groups

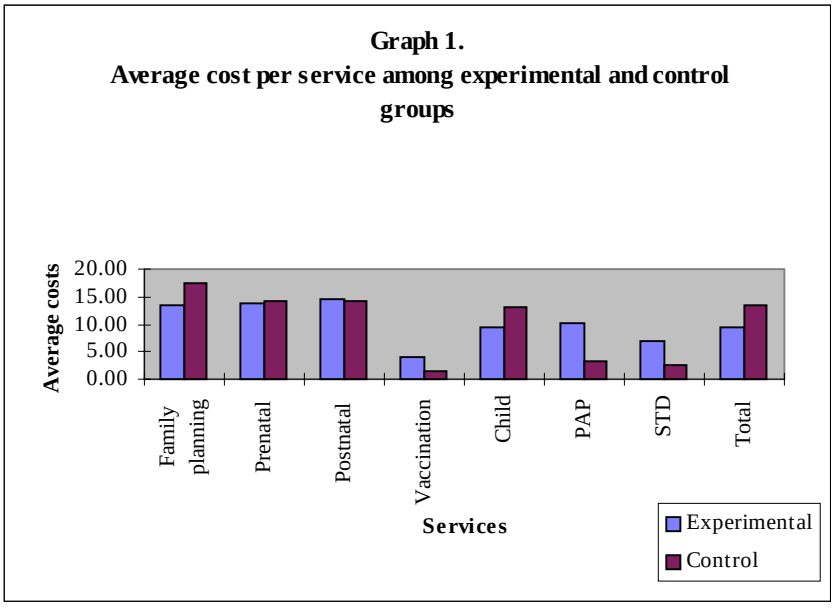

Table 2.
Average cost per service at Health Centers and Post
Experimental and control groups.
Ministry of Health of Guatemala. USD, 1997.

	Center		Post				
	Exprimental	*Control*	*Experimental*	*Control*	*Total*	*F*	*sign(F)*
Family planning	3.81	12.28	15.72	18.43	15.27	1.73	0.1778
Prenatal	6.13	11.87	15.41	14.73	13.96	0.7991	0.5052
Postnatal	7.86	12.93	15.88	14.64	14.38	0.5196	0.6715
Vaccination	1.96	0.79	4.73	1.46	3.56	1.96	0.1524
Child	3.20	11.65	10.65	13.58	11.01	0.6823	0.5689
PAP	10.27	3.11	0.00	0.00	8.48	0.6696	0.499
STD	7.54	2.37	6.62	0.00	6.58	0.499	0.675
Total	2.53	11.42	11.05	13.72	11.22	0.8391	0.4814
Base N	4	3	18	15	40		

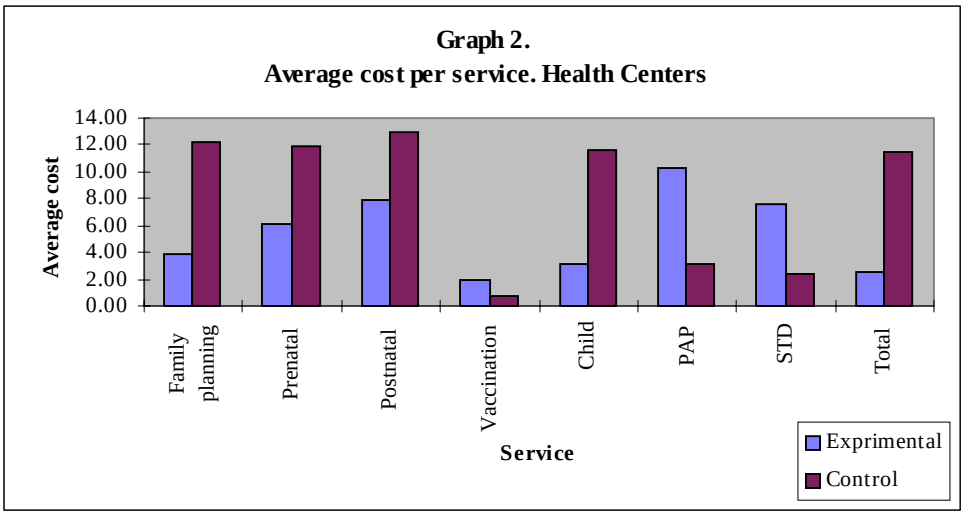

Table 3

Number of services provided. First time and subsequent visits. Ministry of Health, Guatemala. Visits.

Number of service provided	First time				Follow-up				Total	
	Control		Experimental		Control		Experimental			
	Cases	Per cent	Cases	Per Cent	Cases	Per cent	Cases	Per cent	Cases	Per cent
1	125	85.00	82	83.70	181	92.30	99	81.10	487	86.66
2	22	15.00	14	14.30	14	7.10	21	17.20	71	12.63
3			2	2.00			2	1.60	4	0.72
Total	147	100.00	98	100.00	195	100.00	122	100.00	562	100.00

Table 4

Average consultation duration in experimental and control sites by number of services provided. First time and follow-up visits Ministry of Health, Guatemala. Visits.

Number of services	First time				Follow-up				Total			
	Control		Experimental		Control		Experimental		Control		Experimental	
	Cases	Minutes	Cases	Minutes	Cases	Minutes	Cases	Minutes	Cases	Minutes	Cases	Minutes
1	124	13.307	82	11.585	178	9.746	95	9.630	302	11.028	177	10.536
2	21	13.952	14	13.357	14	14.357	20	9.650	35	14.114	34	11.177
3			2	17.500			2	9.500			4	13.500
Total	145	13.400	98	11.959	192	10.056	117	9.631	337	11.491	215	10.692

Graph 3.
Average consultation duration in experimental and control sites

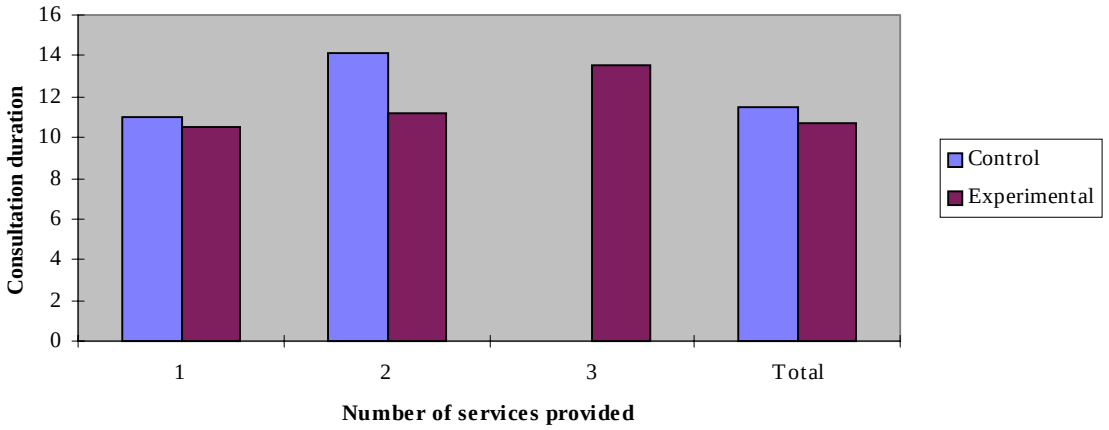

Table 5.
Total personnel attention by type of service provider and number of services provided. Ministry of Health. Guatemala. Minutes

	Control						Experimental						Total		Total	
Number of services	Doctor Minutes	N	Nurse Minutes	N	Other Minutes	N	Doctor Minutes	N	Nurse Minutes	N	Other Minutes	N	Control Minutes	N	Experimental Minutes	N
1	7.88	81	12.58	216	5.80	5	8.80	10	10.95	154	7.00	13	11.21	302	10.54	177
2	23.00	2	13.58	33			7.86	7	11.65	26	22.00	1	14.11	35	11.18	34
3									13.50	4					13.50	4
Total	8.24	83	249.00	12.6233	5.80	5	8.41	17	11.10	184	8.07	14	11.49	338	10.69	215

Table 6.
Labor costs of personnel attention by main consultation motive among experimental and control sites. Ministry of Health of Guatemala. Guatemala. USD, 1997.

	Control						Experimental						Total			
	Doctor		Nurse		Other		Doctor		Nurse		Other		Control		Experimental		Total	
	Cost	N	Cost	N	Cost	N	Cost	N	Cost	N	Cost	N	Cost	N	Cost	N	Cost	N
General	1.74	29	1.60	139			1.94	4	1.58	92	1.48	2	1.63	168	1.59	98	1.61	266
Prenatal	3.18	25	3.02	55			3.04	8	3.03	19			3.07	80	3.04	27	3.06	107
Postnatal	6.24	5	6.80	1					6.23	11			6.34	6	6.23	11	6.27	17
Child care	2.39	20	2.22	11			2.43	1	2.20	17	2.18	6	2.33	31	2.21	24	2.28	55
Vaccination			1.08	29	0.94	5			1.03	17	1.03	6	1.06	34	1.03	23	1.05	57
Family Planning	4.45	3	4.25	11					4.12	20			4.29	14	4.12	20	4.19	34
Other	1.58	1	1.92	4			1.75	4	1.54	8			1.85	5	1.61	12	1.68	17
Total	2.70	83	2.02	250	0.94	5	2.44	215	2.29	184	1.58	14	2.17	338	2.25	215	2.20	553

General	9.75	29	8.98	139			10.89	4	8.84	92	8.27	2	9.11	168	8.91	98	9.04	266
Prenatal	17.79	25	16.91	55			17.03	8	16.99	19			17.18	80	17.00	27	17.14	107
Postnatal	34.97	5	38.10	1					34.89	11			35.49	6	34.89	11	35.10	17
Child care	13.39	20	12.42	11			13.63	1	12.33	17	12.19	6	13.05	31	12.35	24	12.74	55
Vaccination			6.03	29	5.29	5			5.78	17	5.74	6	5.92	34	5.77	23	5.86	57
Family Planning	24.93	3	23.78	11					23.08	20			24.03	14	23.08	20	23.47	34
Other	8.84	1	10.76	4			9.83	4	8.61	8			10.38	5	9.01	12	9.41	17
Total	15.11	83	11.33	250	5.29	5	13.69	215	12.81	184	8.87	14	12.17	338	12.63	215	12.35	553

Table 7
Client costs per visit.
Ministry of Health, Guatemala.

	Control		***Experimental***		***Total***	
	N	***%***	***N***	***%***	***N***	***%***
Type of transportation						
Walking	78	78.8	106	67.5	184	71.9
Bus	20	20.2	43	27.4	63	24.6
Own vehicle	1	1.0	7	4.5	8	3.1
Other			1	0.6	1	0.4
Total	99	100.0	157	100.0	256	100.0
	N	***%***	***N***	***%***	***N***	***%***
Have business						
Yes	11	11.1	18	11.5	29	11.3
No	88	88.9	139	88.5	227	88.7
Total	99	100.0	157	100.0	256	100.0
	Minutes	***N***	***Minutes***	***N***	***Minutes***	***N***
Transportation time	58.75	99	38.76	157	46.49	256
	USD$	***N***	***USD$***	***N***	***USD$***	***N***
Expenses	0.72	99	0.71	157	0.71	256
Foregone income	2.04	11	2.43	18	2.29	29